

REMARKS

In the Office Action, the Examiner rejected claims 6-12, and 21-22 under 35 U.S.C. § 102(b) as being anticipated by Das et al. "Channel Routing in Manhattan-Diagonal Model" ("Das"). The Examiner also objected to claims 13-15 as depending from a rejected base claim

In this Amendment, Applicants have amended claims 6, 8-15, and 21-22. Accordingly, claims 6-15 and 21-22 will be pending after entry of this Amendment.

I. Rejection of Claims 6-7 under § 102(b)

The Examiner rejected claims 6-7 under § 102(b) as being as being anticipated by Das. Applicants respectfully traverse these rejections as explained below, but has amended claim 6 in the interest of expeditious prosecution.

Claim 7 depends directly on claim 6. Claim 6 recites a method of defining global routes for nets in an arbitrary region of a circuit layout. Each net has a set of pins. The method includes using a first set of lines to measure the length of the global routes, using a second set of lines to measure congestion of the global routes, using a third set of lines to partition an arbitrary region into a first set of sub-regions, and for each net, identifying a global route that connects a group of first-set sub-regions that contain the net's set of pins.

Accordingly, claim 6 recites a global routing method that defines global routes that connect sub-regions that contain pins. Das does not disclose, teach or even suggest such a global routing method. Das discloses a detailed channel router that connects pins to each other. Specifically, Das describes "a rectangular channel... and two rows of terminals", and describes exact routes connecting specific pins. As seen in Das, figures 1-12, Das is directed toward the exact arrangement of local wires from one pin to another. This is in contrast to claim 6, which recites a global routing method that defines global routes that connect sub-regions that contain

pins rather than the pins themselves. To clarify this distinction between claim 6 and Das, Applicants have amended claim 6 to include the limitation “global” to the “routes”.

Additionally, Das does not use a first set of lines to measure length of routes and a second set of lines to measure congestion. The Office Action cites Das, figure 1, as showing two sets of lines, manhattan wiring and diagonal wiring. However, in Das, both of these sets of lines are used to measure the length of routes. Neither the manhattan nor the diagonal lines in Das are used to measure congestion. This is in contrast to claim 6, which recites a method using a second set of lines to measure congestion of the global routes.

Applicants are amending claim 6 for clarification, and not for reasons of patentability. Applicants do not surrender any equivalents of amended limitations.

In view of the foregoing remarks, Applicants respectfully submit that Das does not anticipate or otherwise render invalid the method of claim 6. Given that claim 7 is dependent on claim 6, Applicants respectfully submits that the cited reference does not render unpatentable claims 6-7. Accordingly, Applicants respectfully request reconsideration and withdrawal of the §102(b) rejections of claims 6-7.

II. Rejection of Claims 8-15 under § 102(b)

The Examiner rejected claims 8-15 under § 102(b) as being as being anticipated by Das. Applicants respectfully traverse these rejections as explained below, but has amended claims 8-15 in the interest of expeditious prosecution.

Claims 9-16 depend directly or indirectly on claim 8. Claim 8 recites a method of defining global routes for nets in an arbitrary region of a circuit layout. Each net has a set of pins. The method includes using a set of intersecting lines to measure the length of the global routes.

The set of lines defines a set of sub-regions within the arbitrary region of a circuit layout. The method includes using a second set of intersecting lines to measure the congestion of the global routes. The method includes, for each net, identifying a global route that connects a group of first-set sub-regions that contain the net's set of pins; wherein each route has a set of route segments, and each route segment connects two sub-regions in the first set of sub-regions.

Accordingly, claim 8 recites a global routing method that defines global routes that connect sub-regions that contain pins. Das does not disclose, teach or even suggest such a global routing method. Das discloses a detailed channel router that connects pins to each other. Specifically, Das describes “a rectangular channel... and two rows of terminals”, and describes exact routes connecting specific pins. As seen in Das, figures 1-12, Das is directed toward the exact arrangement of local wires from one pin to another. This is in contrast to claim 8, which recites a global routing method that defines global routes that connect sub-regions that contain pins rather than the pins themselves. To clarify this distinction between claim 8 and Das, Applicants have amended claim 6 to include the limitation “global” to the “routes”.

Additionally, Das does not use a first set of lines to measure length of routes and a second set of lines to measure congestion. The Office Action cites Das, figure 1, as showing two sets of lines, manhattan wiring and diagonal wiring. However, in Das, both of these sets of lines are used to measure the length of routes. Neither the manhattan nor the diagonal lines in Das are used to measure congestion. This is in contrast to claim 8, which recites a method using a second set of lines to measure congestion of the global routes.

Applicants are amending claims 8-15 for clarification, and not for reasons of patentability. Applicants do not surrender any equivalents of amended limitations.

In view of the foregoing remarks, Applicants respectfully submit that Das does not anticipate or otherwise render invalid the method of claim 8. Given that claims 9-15 are dependent directly or indirectly on claim 8, Applicants respectfully submit that the cited reference does not render unpatentable claims 8-15. Accordingly, Applicants respectfully request reconsideration and withdrawal of the §102(b) rejections of claims 8-15.

III. Rejection of Claim 21 under § 102(b)

The Examiner rejected claim 21 under § 102(b) as being anticipated by Das. Applicants respectfully traverse these rejections as explained below, but has amended claim 21 in the interest of expeditious prosecution.

Claim 21 recites a computer program embedded in a computer readable medium. The computer program defines global routes for nets in an arbitrary region of a circuit layout. The computer program includes instructions for using a first set of lines to measure length of the global routes, using a second set of lines to measure congestion of the global routes, using a third set of lines to partition the arbitrary region into a first set of sub-regions. The computer program includes instructions for identifying for each net, a global route that connects a group of first-set sub-regions that contain the net's set of pins.

Accordingly, claim 21 recites a computer program that defines global routes that connect sub-regions that contain pins. Das does not disclose, teach or even suggest such a computer program. Das discloses a detailed channel router that connects pins to each other. Specifically, Das describes “a rectangular channel... and two rows of terminals”, and describes exact routes connecting specific pins. As seen in Das, figures 1-12, Das is directed toward the exact arrangement of local wires from one pin to another. This is in contrast to claim 21, which recites

a computer program that defines global routes that connect sub-regions that contain pins rather than the pins themselves. To clarify this distinction between claim 21 and Das, Applicants have amended claim 21 to include the limitation “global” to the “routes”.

Additionally, Das does not use a first set of lines to measure length of routes and a second set of lines to measure congestion. The Office Action cites Das, figure 1, as showing two sets of lines, manhattan wiring and diagonal wiring. However, in Das, both of these sets of lines are used to measure the length of routes. Neither the manhattan nor the diagonal lines in Das are used to measure congestion. This is in contrast to claim 21, which recites a method using a second set of lines to measure congestion of the global routes.

Applicants are amending claim 21 for clarification, and not for reasons of patentability. Applicants do not surrender any equivalents of amended limitations.

In view of the foregoing remarks, Applicants respectfully submit that Das does not anticipate or otherwise render invalid the method of claim 21. Accordingly, Applicants respectfully request reconsideration and withdrawal of the §102(b) rejections of claims 21.

IV. Rejection of Claim 22 under § 102(b)

The Examiner rejected claim 22 under § 102(b) as being anticipated by Das. Applicants respectfully traverse these rejections as explained below, but has amended claim 21 in the interest of expeditious prosecution.

Claim 22 recites a computer program embedded in a computer readable medium. The computer program defines global routes for nets in an arbitrary region of a circuit layout. The computer program includes instructions for using a first set of intersecting lines to measure length of the global routes. The first set of lines defines a first set of sub-regions within the

arbitrary region of a circuit layout. The computer program also includes instructions for using a second set of intersecting lines to measure congestion of the global routes. The computer program also includes instructions for identifying for each net, a global route that connects a group of first-set sub-regions that contain the net's set of pins; wherein each global route has a set of global route segments, and each global route segment connects two sub-regions in the first set of sub-regions.

Accordingly, claim 22 recites a computer program that defines global routes that connect sub-regions that contain pins. Das does not disclose, teach or even suggest such a computer program. Das discloses a detailed channel router that connects pins to each other. Specifically, Das describes “a rectangular channel... and two rows of terminals”, and describes exact routes connecting specific pins. As seen in Das, figures 1-12, Das is directed toward the exact arrangement of local wires from one pin to another. This is in contrast to claim 22, which recites a computer program that defines global routes that connect sub-regions that contain pins rather than the pins themselves. To clarify this distinction between claim 22 and Das, Applicants have amended claim 21 to include the limitation “global” to the “routes”.

Additionally, Das does not use a first set of lines to measure length of routes and a second set of lines to measure congestion. The Office Action cites Das, figure 1, as showing two sets of lines, manhattan wiring and diagonal wiring. However, in Das, both of these sets of lines are used to measure the length of routes. Neither the manhattan nor the diagonal lines in Das are used to measure congestion. This is in contrast to claim 22, which recites a method using a second set of lines to measure congestion of the global routes.

Applicants are amending claim 22 for clarification, and not for reasons of patentability. Applicants do not surrender any equivalents of amended limitations.

In view of the foregoing remarks, Applicants respectfully submit that Das does not anticipate or otherwise render invalid the method of claim 22. Accordingly, Applicants respectfully request reconsideration and withdrawal of the §102(b) rejections of claim 22.

CONCLUSION

In view of the foregoing, it is submitted that all pending claims, namely claims 6-15 and 21-22 are in condition for allowance. Reconsideration of the rejections is requested. Allowance is earnestly solicited at the earliest possible date.

Dated: 11/7/05

Respectfully submitted,

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